## Space Weather Forecast

Issued on Wednesday, 09 November 2022 at 12:53 Local

**This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales**

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**Space Weather Forecast Headline: Chance of isolated Moderate class flares (R1-R2/ Minor to Moderate radio blackouts). Very slight chance of G1/Minor storms days 1 and 2 (9th and 10th).**

**Analysis of Space Weather Activity over past 24 hours**

**Solar Activity:** Solar activity has been Low, with only one Common-class flare. There are currently five numbered sunspot regions and one unnumbered group on the visible disc. A large region in the east remains the most active and complex. Another spot in the far northeast is the second largest region, with a moderately sized mature spot, but is largely inactive. The only other moderately sized spot resides in the far northwestern hemisphere. All other spots are relatively small and simple at this time. No Earth-directed Coronal Mass Ejections (CMEs) have been observed.

**Solar Wind / Geomagnetic Activity:** The solar wind has been at background levels. Total magnetic field strength, IMF, has been predominantly weak. The important north-south component, has been weakly negative, becoming close to neutral by the end of the period. Geomagnetic activity was Quiet to Unsettled (Kp 1-3).

**Energetic Particles / Solar Radiation:** The count rate of energetic particles (high energy protons) remained at background levels with no solar radiation storms observed.

**Four-Day Space Weather Forecast Summary**

**Solar Activity:** Solar activity is forecast to be generally Low, with a chance of isolated Moderate activity.

**Solar Wind / Geomagnetic Activity:** Geomagnetic activity is expected to be mainly Quiet to Unsettled given generally slow-ambient solar winds. There is a chance of Active intervals at times and a very slight chance of G1/Minor Storm intervals, mainly due to the possible arrival of one or more coronal hole high speed streams during days 1 and 2 (9th and 10th Nov). Becoming mostly Quiet to Unsettled on days 3 and 4 (11th and 12th) due to waning effects of any coronal hole fast winds.

**Energetic Particles / Solar Radiation:** The count rate of energetic particles (High energy protons) is forecast to persist at background with no solar radiation storms anticipated.

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 330 135 4254 Email: moswoc@metoffice.gov.uk

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Met Office

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**Geomagnetic Storms:**

| Geo-Magnetic Storm Probability (Exceedance) | Level | Past 24 Hours (Yes/No) | Day 1 (00-24 UTC) (%) | Day 2 (00-24 UTC) (%) | Day 3 (00-24 UTC) (%) | Day 4 (00-24 UTC) (%) |
|---|---|---|---|---|---|---|
| Minor or Moderate | G1 to G2 | No | 10 | 10 | 5 | 5 |
| Strong | G3 | No | 1 | 1 | 1 | 1 |
| Severe | G4 | No | 1 | 1 | 1 | 1 |
| Extreme | G5 | No | 1 | 1 | 1 | 1 |

**Radio Blackouts - X Ray Flares:**

| X Ray Flares Probability | Level | Past 24 Hours (Yes/No) | Day 1 (00-24 UTC) (%) | Day 2 (00-24 UTC) (%) | Day 3 (00-24 UTC) (%) | Day 4 (00-24 UTC) (%) |
|---|---|---|---|---|---|---|
| Active | R1-R2 M Class | No | 20 | 25 | 30 | 30 |
| Very Active | R3 to R5 X | No | 5 | 5 | 5 | 5 |

**Solar Radiation Storms - (High Energy Protons):**

| Radiation Storms Probability (Exceedance) | Level ($cm^{-2}$ $sr^{-1}$ $s^{-1}$) | Past 24 Hours (Yes/No) | Day 1 (00-24 UTC) (%) | Day 2 (00-24 UTC) (%) | Day 3 (00-24 UTC) (%) | Day 4 (00-24 UTC) (%) |
|---|---|---|---|---|---|---|
| Active | ≥ S1 | No | 1 | 1 | 2 | 5 |
| Very Active | ≥ S3 * | No | 1 | 1 | 1 | 1 |

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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